

No. XV.—ON THE LAND AND AMPHIBIOUS DECAPODA OF ALDABRA.

By L. A. BORRADAILE, *M.A.*, *Lecturer in Zoology in the University and at Selwyn College, Cambridge.*

(Communicated by J. STANLEY GARDINER, *M.A.*, *F.R.S.*, *F.L.S.*)

Read 17th February, 1910.

THE collection on which the following paper is based was obtained last year by Mr. J. C. F. Fryer during a stay of five months in Aldabra. It was made with care, and the list with which it furnishes us is probably almost, if not quite, exhaustive. Freshwater forms are wanting, owing to the lack of fresh water on the island, but the collection includes several representatives of the amphibious fauna of the mangrove swamps.

All the species, of which there are seventeen, belonging to ten genera, are common Indo-Pacific forms, and it is not possible to detect any constant local difference from representatives of the same species taken elsewhere.

The outstanding feature in the land decapod fauna of Aldabra is the presence of the Robber Crab (*Birgus*). This allies it to the Chagos and the eastern parts of the Indo-Pacific, and differentiates it from Minikoi*, the Maldives*, and the Seychelles†, which *Birgus* seems not to have reached. Other indications in the same direction are the presence of *Helice*, which is not found in the north-western Indian Ocean, and the absence of *Geograpsus minikoiensis*, which, so far as is at present known, is peculiar to the latter region, where it is probably a local representative of the more eastern *G. longitarsis*.

With the above exceptions, there is no important difference between the fauna in question in Aldabra and that in the Seychelles. *Uca tetragonum* and *Varuna litterata*, found in the Seychelles, do not appear in the collection from Aldabra, while *Metopograpsus messor*, found in Aldabra, is not yet recorded from the Seychelles; but in view of the fact that these species are found as far north as the Red Sea, and as far east as the east coast of Africa, it seems likely that either they have been overlooked in the islands in question, or their absence is due to special, and perhaps even temporary, causes. Somewhat greater discrepancy appears between the list of the land Decapoda of Aldabra and that of those known to occur in the Maldives. The Aldabra list is considerably the larger of the two. Besides the forms mentioned in the last paragraph, *Cardisoma hirtipes*, *Metopograpsus messor*, *Sesarma quadratum*, *S. intermedia*, and *Grapsus grapsus*,

* See Gardiner's 'Fauna of the Maldives,' vol. i. pp. 64-100.

† See Trans. Linn. Soc. London, ser. 2, Zool. vol. xii. (1907) pp. 63-68.

which are found in Aldabra, have not been recorded from the Maldives. All these are common species and occur in Africa and on the west coast of India, so that it is possible that some of them have been overlooked by the collectors, but it is unlikely, considering the care with which the collections were made, that this has been the case with them all. On the other hand, *Metasesarma rousseauxi*, found in the Maldives, was not taken in Aldabra. Since this species is also not recorded from the Seychelles, it seems likely that its southern limit is here reached in the Maldives. The Minikoi fauna is still poorer than that of the Maldives, lacking *Uca annulipes*, *Cardisoma carnifex*, and *Cænobita compressus*.

It will be gathered from the above remarks that the land Decapod fauna of the islands of the western Indian Ocean is essentially eastern, and that it shows from south-west to north-east a continuous impoverishment, which culminates in the island of Minikoi, just where *à priori* the fauna would have been supposed to have been richest, since it is there nearest to the continuous land connection with the east. A full discussion of this problem is at present impossible, especially in view of our ignorance of the length of life of the sea-borne larvæ by which all the forms in question are spread, and of the lack of an exhaustive list of the fauna of Ceylon, which is a crucial point for the enquiry; but it is possible that some indication of the solution may be found in the fact that, whereas the south-western portion of the Indian Ocean receives continually the equatorial current from the east, in the north-west the currents vary in direction with the monsoons, so that communication in either direction is intermittent. In this connection the question of the breeding-time of the species may be of importance. Many tropical Decapoda may be found with young at various periods of the year; but our knowledge on this point is scanty, and it may be that in some cases the principal or only time at which the larvæ are set free is one in which the currents in the north-western Indian Ocean are not favourable for their passage from east to west.

The Chagos, lying in the middle of the eastward-setting equatorial counter current, would receive its fauna from the south and west; and this suggests that the absence of *Birgus* from the Seychelles, due west of the Chagos, may be due to its extermination by human or some other agency. *Geograpsus minikoiensis* and *Metasesarma rousseauxi* appear to belong to the northern portion of the area, and not yet to have reached the southern islands. The general direction of the currents within the western half of the Indian Ocean from south to north would hinder the southern spread of any form which had by any means obtained a footing in the north alone. If it should eventually prove that a solution of the problem is impossible on these lines, the only alternative will be to seek the causes which render the north-western part of the Indian Ocean uninhabitable by a number of forms which flourish in the south-west.

The following is a list of the species taken in Aldabra:—

DECAPODA REPTANTIA.

BRACHYURA BRACHYGNATHA.

Family Grapsidæ.

Subfamily Grapsinæ.

Genus *GRAPSUS*, Lam., 1818.1. *Grapsus grapsus* (Linn.), 1766.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 392 (1900) *.

Locality. Mainland.Genus *GEOGRAPSUS*, Stimps., 1858.2. *Geograpsus crinipes* (Dana), 1851.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 396 (1900).

Locality. Mainland.3. *Geograpsus grayi* (H. M.-Edw.), 1853.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 395 (1900).

Locality. Aldabra.Genus *METOPOGRAPSUS*, H. M.-Edw., 1853.4. *Metopograpsus messor* (Forsk.), 1775.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 397 (1900).

Locality. Mangrove-swamp, mainland.

Subfamily Sesarminæ.

Genus *SESARMA*, Leach, 1817.5. *Sesarma quadratum* (Fabr.), 1798.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 413 (1900).

Locality. Mangrove-swamp, mainland.6. *Sesarma intermedium* (de Haan), 1835.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 416 (1900).

Localities. Mangrove-swamp, mainland, and Basin Cabris, Picard I.

* The references in this paper are limited to one for each species. So far as possible, this is taken from Alcock's work on the Indian Crabs.

Genus *HELICE*, de Haan, 1835.

7. *Helice tridens*, de Haan, 1835.

Kingsley, Proc. Ac. Nat. Sci. Philadelphia, 1880, p. 219.

Locality. Mangrove-swamp, Picard.

Family **Gecarcinidæ.**

Genus *CARDISOMA*, Latr., 1825.

8. *Cardisoma carnifex* (Hbst.), 1794.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 445 (1900).

Locality. Ile Michel.

9. *Cardisoma hirtipes*, Dana, 1851.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 447 (1900).

Locality. Mainland.

Family **Ocypodidæ.**

Subfamily **Ocypodinæ.**

Genus *OCYPODE*, Fabr., 1798.

10. *Ocypode ceratophthalma* (Pallas), 1772.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 345 (1900).

Localities. Ile Esprit and Ile Michel.

11. *Ocypode cordimana*, Desm., 1825.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 349 (1900).

Locality. Aldabra.

Genus *UCA*, Leach, 1815.

12. *Uca annulipes* (H. M.-Edw.), 1837.

Alcock, Journ. As. Soc. Bengal, lxix. ii. 3, p. 353 (1900).

Locality. Aldabra.

ANOMURA PAGURIDEA.

Family **Cænobitidæ.**

Genus *BIRGUS*, Leach, 1815.

13. *Birgus latro* (Linn.), 1767.

Ortmann, Zool. Jahrb. vi. Syst. p. 319.

Locality. Aldabra.

Genus *CÆNOBITA*, Latr., 1826.

14. *Cænobita perlatus*, H. M.-Edw., 1837.

Ortmann, Zool. Jahrb. Syst. vi. p. 319, pl. 12. fig. 25 (1892).

Locality. Ile Esprit.

15. *Cænobita rugosus*, H. M.-Edw., 1837.

Ortmann, Zool. Jahrb. Syst. vi. p. 317, pl. 12. fig. 22 (1892).

Locality. Ile Esprit.

16. *Cænobita compressus*, H. M.-Edw., 1837.

Ortmann, Zool. Jahrb. Syst. vi. p. 318, pl. 12. fig. 23 (1892).

Locality. Mangrove-swamp, mainland.

17. *Cænobita clypeatus*, Latr., 1826.

Ortmann, Zool. Jahrb. Syst. vi. p. 315, pl. 12. fig. 20 (1892).

Locality. Polymnie I.